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EXAMINER	
LY, NGHI H	

ART UNIT	PAPER NUMBER
2686	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/599,036	YOUSEFI ET AL.	
	Examiner	Art Unit	
	Nghi H. Ly	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-22 and 24-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26 and 27* is/are allowed.

6)☒ Claim(s) *1-9,13-21,24 and 25* is/are rejected.

7)☒ Claim(s) *10,11 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8 and 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al (US 6,275,518).

Regarding claim 1, Takahashi teaches a method for providing a variable hop cycle beam laydown (see Abstract), the method comprising: transmitting first downlink beam energy for first cells according to a first beam hop cycle (see fig.3, base station A or B with beams or in order to transmit signal, the teaching of Takahashi inherently teaches the downlink beam energy for first cells, and see column 3, lines 50-64), transmitting second downlink beam energy for second cells according to a second beam hop cycle different from the first beam hop cycle (also see column 3, lines 50-64, Takahashi teaches "frequency hopping in different cells". Therefore, the teaching of Takahashi inherently includes second downlink beam energy for second cells), and transmitting transition downlink beam energy for transition cells according to a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle (also see column 3, lines 50-64, Takahashi teaches "frequency hopping in

different cells" and "a plurality of predetermined radio frequencies are hoped at regular time intervals". Therefore, the teaching of Takahashi inherently includes transmitting transition downlink beam energy for transition cells), wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells (see Fig.3, at the same time, a single beam of base station A also cover part of cell B, and at the same time, a single beam of base station B also cover part of cell A. Therefore, the amount of time spent on transmitting a single beam can be shared by another cell and it reads on Applicant's "time-shared between at least two cells") and wherein each of the transmitting steps comprises transmitting beam energy to at least two cells (see Fig.3, cells A and B) in a sequential manner defined by a hop cycle (see column 3, lines 50-64, Takahashi teaches "frequency hopping in different cells" and "a plurality of predetermined radio frequencies are hoped at regular time intervals". Therefore, Takahashi's "at regular time intervals" reads on Applicant's "a sequential manner").

Regarding claim 2, Takahashi further teaches transmitting first downlink beam energy comprises transmitting downlink beam energy for a first beam-hopped pair of cells (see fig.3, base station A or B with beams or in order to transmit signal, the teaching of Takahashi inherently teaches the downlink beam energy for first cells, and see column 3, lines 50-64), wherein transmitting second downlink beam energy comprises transmitting downlink beam energy for a second beam-hopped pair of cells (also see column 3 lines 50-64), and wherein transmitting transition downlink beam energy comprises transmitting downlink beam energy for a transition beam-hopped pair

of cells (also see fig.3, base station A or B with beams or in order to transmit signal, the teaching of Takahashi inherently teaches the downlink beam energy for first cells, and see column 3 lines 50-64).

Regarding claim 3, Takahashi further teaches transmitting transition downlink beam energy comprises transmitting power gated downlink frames (see column 5, lines 14-18).

Regarding claim 4, Takahashi further teaches each transmitting step comprises transmitting at least a first frequency and first polarization (see column 3, lines 35-48).

Regarding claim 5, Takahashi further teaches transmitting second downlink energy comprises transmitting second downlink beam energy according to a second beam hop cycle that provides additional bandwidth to meet bandwidth needed for one of the second cells (see column 3 lines 50-64, Takahashi teaches "frequency hopping in different cells". Therefore, the teaching of Takahashi inherently includes second downlink beam energy for second cells).

Regarding claim 6, claim 6 is rejected with a similar reason as set forth in claim 3 above.

Regarding claim 7, Takahashi teaches a variable beam hop cycle beam laydown (see fig.3, base station A or B with beam) comprising: first cells supported by a first beam hop cycle see fig.3, base station A or B with beams or in order to transmit signal, the teaching of Takahashi inherently teaches the downlink beam energy for first cells, and see column 3, lines 50-64), second cells supported by a second beam hop cycle different from the first beam hop cycle (also see column 3, lines 50-64, Takahashi

teaches "frequency hopping in different cells". Therefore, the teaching of Takahashi inherently includes second downlink beam energy for second cells), and transition cells supported by a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle wherein each-beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells (see Fig.3, at the same time, a single beam of base station A also cover part of cell B, and at the same time, a single beam of base station B also cover part of cell A. Therefore, the amount of time spent on transmitting a single beam can be shared by another cell and it reads on Applicant's "time-shared between at least two cells") and wherein each of the hop cycles defines a schedule (column 3, lines 50-64, Takahashi teaches "a plurality of predetermined radio frequencies are hoped at regular time intervals". Therefore, Takahashi's "at regular time intervals" reads on Applicant's "the hop cycles defines a schedule") for transmitting beam energy to at least two cells (see fig.3, cells A and B) in a sequential (column 3, lines 50-64, see "a plurality of predetermined radio frequencies are hoped at regular time intervals) and non-simultaneously manner (column 7, lines 43-60, see "the frequency hopping pattern is used constantly with a regular time difference in the two cells A, B". Therefore, Takahashi's "a regular time difference" reads on Applicant's "non-simultaneously manner").

Regarding claim 8, claim 8 is rejected with a similar reason as set forth in claim 2 above.

Regarding claim 13, claim 13 is rejected with a similar reason as set forth in claim 4 above.

Regarding claim 14, Takahashi further teaches the first cells are adjacent cells, the second cells are non-adjacent cells, and the transition cells are adjacent cells (column 3, lines 25-31, see "plurality of cells", in Takahashi, any cell between two cells is a transition cell and the transition cells are adjacent cells of first cell and second cell).

Regarding claim 15, Takahashi further teaches the first cells are non-adjacent cells, second cells are non-adjacent cells, and the transition cells are non-adjacent cells (column 3, lines 25-31, see "plurality of cells", in Takahashi, any first, second or transition cells that are not adjacent).

Regarding claim 16, claim 16 is rejected with a similar reason as set forth in claim 14 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (US 6,275,518).

Regarding claim 9, Takahashi teaches variable hop cycle beam in claim 7. Takahashi does not specifically disclose the first hop cycle is a 50-50 beam hop cycle wherein beam energy is directed to two cells sequentially on a 50-50 duty cycle basis.

However, such beam hop cycle would have been obvious since the particular hop cycle could have been determined by the inventors' needs e.g., use a hop cycle which can prevent signals being interfered in a most optimal way during the transmission.

6. Claims 17-21, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (US 6,275,518) in view of Martin et al (US 6,061,562).

Regarding claim 17, Takahashi teaches apparatus for generating a variable hop cycle beam laydown (see Abstract), the apparatus comprising: a waveform generator producing a first downlink beam (see fig.3, base station A or B with beams or in order to transmit signal, the teaching of Takahashi inherently teaches the downlink beam energy for first cells, and see column 3, lines 50-64)), second downlink beam (also see column

3, lines 50-64, Takahashi teaches "frequency hopping in different cells". Therefore, the teaching of Takahashi inherently includes second downlink beam), and a transition downlink beam and directing the second downlink beam between second feed paths to second cells and directing the transition downlink beam between third feed paths to transition cells (also see column 3, lines 50-64, Takahashi teaches "frequency hopping in different cells" and "a plurality of predetermined radio frequencies are hoped at regular time intervals". Therefore, the teaching of Takahashi inherently includes a transition cells, a transition downlink beam and a second cells) and a second beam hop cycle different from the first hop cycle and a transition beam hop cycle (also see column 3 lines 50-64, "frequencies are hopped et regular interval" and "replaced with another pattern") and at least one of the first downlink beam is directed between first feed paths to first cells (see Abstract, hoping pattern between the cells), wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells (see Fig.3, at the same time, a single beam of base station A also cover part of cell B, and at the same time, a single beam of base station B also cover part of cell A. Therefore, the amount of time spent on transmitting a single beam can be shared by another cell and it reads on Applicant's "time-shared between at least two cells") and wherein operation of the at least one switch ensures that each downlink beam is directed to at least two cells (see fig.3, cells A and B) in sequential (column 3, lines 50-64, see "a plurality of predetermined radio frequencies are hoped at regular time intervals) and non-simultaneously manner (column 7, lines 43-60, see "the frequency hopping pattern is used constantly with a regular time difference in the two cells A, B".

Therefore, Takahashi's "a regular time difference" reads on Applicant's "non-simultaneously manner").

Takahashi does not specifically disclose at least one switch directing the downlink beam between first feed paths to first cells and at least one feed path selection input coupled to the at least one switch and a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first hop cycle.

Martin teaches at least one switch directing the first downlink beam between first feed paths to first cells and at least one feed path selection input coupled to the at least one switch (see column 1, lines 59-67) and a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch (see column 2 lines 43-46) according to a first hop cycle (see column 4, lines 61-67, also see column 6, lines 21-23, "a single hop across ASN 14 comprising two links 50").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the above teaching of Martin into the system of Takahashi in order to eliminate the need for base station equipment and facilities associated with terrestrial system (see Martin, column 2, lines 51-52).

Regarding claim 18, Takahashi teaches a power gating circuit coupled to the waveform generator for gating power in the transition downlink beam (see Abstract and fig.11A box 83, the teaching of Takahashi inherently teaches a power gating circuit coupled to the waveform generator for gating power in the transition downlink beam).

Regarding claim 19, Takahashi further teaches the first, second, and transition downlink beams comprise frames with a header field and a payload field (see column 5, lines 14-18).

Regarding claim 20, Takahashi teaches variable hop cycle beam in claim 17. Takahashi does not specifically disclose the first beam hop cycle directs additional bandwidth to one of the first cells to meet bandwidth need.

Martin teaches the first beam hop cycle directs additional bandwidth to one of the first cells to meet bandwidth need (see Martin, column 4 line 63 to column 5, lines 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the above teaching of Martin into the system of Takahashi in order to support communication between ASN and gateway (see Martin, column 5, lines 2-3).

Regarding claim 21, Takahashi teaches variable hop cycle beam in claim 17. Takahashi does not specifically disclose the first hop cycle is a 75-25 beam hop cycle in which beam energy is divided temporally between two cells on a 75-25 duty cycle basis.

However, such hop cycle would have been obvious since the particular hop cycle could have been determined by the inventors' needs e.g., use a hop cycle which can prevent signals being interfered in a most optimal way during the transmission.

Regarding claim 24, Takahashi further teaches the first, second, and transition cells are adjacent cells (column 3, lines 25-31, see "plurality of cells", in Takahashi, any cell between two cells is a transition cell and the transition cells are adjacent cells of first cell and second cell).

Regarding claim 25, Takahashi further teaches the first, second, and transition cells are non-adjacent cells (column 3, lines 25-31, see "plurality of cells", in Takahashi, any first, second or transition cells that are not adjacent).

Allowable Subject Matter

7. Claims 10, 11 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 10, Takahashi teaches claim 7. Takahashi fails to teach the second beam hop cycle in a 75-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 75-25 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

Regarding claim 22, the combination of Takahashi and Martin teaches claim 17. The combination of Takahashi and Martin fails to teach the second beam hop cycle in a 50-50 beam hop cycle in which beam energy is divided temporally between two cells on a 50-50 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

8. Claims 26 and 27 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 26 and 27 are allowable over the prior art of record for the reasons as stated in the previous Office action dated 01/14/2004 (pages 7-9).

Response to Arguments

9. Applicant's arguments filed 04/08/2004 have been fully considered but they are not persuasive.

On pages 9 and 12 of applicant's remarks, applicant argues that neither Takahashi nor Martin teaches a beam hopping system.

The examiner, however, disagrees. In order to transmit signal from the base station A or B to the radio terminal, the antenna of base station A or B inherently transmits a beam, and Takahashi teaches hopping scheme (see Abstract). Therefore, the teaching of Takahashi indeed teaches a beam hopping system as claimed.

On page 9 of applicant's remarks, Applicant further argues that Takahashi does not teach any scheme of beam hopping.

The examiner, however, disagrees. In order to transmit signal from the base station A or B to the radio terminal, the antenna of base station A or B inherently transmits a beam, and Takahashi teaches hopping scheme (see Abstract). Therefore, the teaching of Takahashi indeed teaches beam hopping as claimed.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (571) 272-7911. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nghi H. Ly

06/10/05

CHARLES APPIAH
PRIMARY EXAMINER